REMARKS

Reconsideration of the present application is respectfully requested.

The present Amendment is identical to the Amendment filed on August 21, 2003, except that the status identifier of claim 11 has been changed from "Amended" to "Currently Amended" in response to the Notice of Non-Compliant Amendment mailed on August 28, 2003 to clearly indicate that the claim is being amended in the present Amendment. The Examiner should note that the Notice of Non-Compliant Amendment erroneously indicated that the status identifier of claim 10 was incorrect, when in fact the status identifier of claim 11 was incorrect.

In the REQUEST FOR APPROVAL OF PROPOSED DRAWING CHANGE PER MPEP §§608.02(p),(r) filed on March 12, 2003, Applicants requested approval of a minor change to FIG. 9. The Examiner has not expressly indicated approval of this proposed change. Therefore, Applicants are now submitting a revised formal version of FIG. 9 herewith for approval and entry into the record per current U.S. Patent Office practice. Approval of revised FIG. 9 and entry into the record is respectfully requested.

Claims 1, 5, 6, 10, 11 and 15 have been rejected under 35 U.S.C. §102(a) as being anticipated by U.S. Patent No. 6,069,471 to Nguyen (Nguyen). Applicant respectfully traverses this rejection, and notes that the Examiner has mistakenly categorized Nguyen as a §102(a) reference rather than a §102(b) reference.

The Examiner asserts that the Background section of Nguyen (FIGS. 1 and 2) discloses a DC-to-DC converter that includes a low-side switching circuit (114) that is controlled to be turned off when a voltage detected by a voltage detector (106) at an output terminal (110) is lower than a predetermined value of a switching element (114), and a high-side switching circuit

(112) that is controlled to be turned off when the voltage detected by the voltage detector (106) at the output terminal (110) is higher than a predetermined threshold.

The Examiner's assertion is incorrect. Specifically, the controller (106) in Nguyen switches FETs (112,114) (identified by the Examiner as high-side and low-side switching circuits) on/off in complementary fashion based on a sample of the voltage at (110) it receives via feedback path (108). By switching the FETs (112, 114) on/off as described above, the controller (106) is able to energize/de-energize inductor (116) and thereby regulate the voltage at (110).

However, Nguyen does not teach that the low-side switching circuit is controlled to be turned off when the voltage detected by the voltage detector is lower than an off-decision voltage which is defined within a voltage range in which the switching element is in an off-state (e.g. claim 1) or that a high-side switching circuit is turned off when the voltage detected by the voltage detector is higher than an on-decision voltage which is defined within a voltage range in which the switching element is in an on-state (e.g. claim 6).

More specifically, and as discussed in detail in the Amendment filed on March 12, 2003, the drive circuit of the present invention includes, and as shown in FIG. 2, a high-side switching circuit (such as T11 and 18) and a low-side switching circuit (such as T12 and 19) that are turned on or off to control the output voltage Vo and therefore the charging/discharging of the gate of the MOSFET 14. For example, the low-side switching circuit (specifically T12) is on to dissipate charges from gate capacitors at the MOSFET 14 when the MOSFET 14 is switched to an off-state (page 15, lines 15-18; page 16, lines 13-15). Further, as recited in claim 1, when Vo is determined to be below a threshold voltage, which is defined by Equation (4) on page 15 as an off-decision voltage that is lower than a threshold voltage of the MOSFET 14 after the gate

capacitor charges have been dissipated, the low-side switching circuit (T12, 19) is turned off in addition to the high-side switching circuit (T11, 18) so that no current flows through either of the transistors T11, T12. Turning off this low-side switching circuit enables the drive circuit to minimize current and power consumption (see pages 17-20). The complementary on/off operation of the FETs 112, 114 in Nguyen to regulate the voltage at (110), with one of the FETs always being on while the other is always off, is for providing a regulated voltage to a microprocessor and has nothing to do with removing charges from a switching element such as the MOSFET 14 or for minimizing current and power consumption.

Similarly, and regarding claim 6, if Vo is determined to be above a predetermined high threshold (i.e. after the gate capacitors of the MOSFET 14 have been charged through the high-side switching circuit when the high-side switching circuit is in an on state), the high-side switching circuit (i.e. T11) is turned off. The MOSFET 14 then is turned on, and both the high-side switching circuit and the low-side switching circuit are switched off. This also minimizes current and power consumption, especially when the MOSFET 14 is on for long periods of time. Again, Nguyen is totally unrelated to this feature of the present invention.

Therefore, as Nguyen fails to disclose all features of claims 1 and 6, Applicant respectfully requests that the Examiner's rejection of claims 1 and 6 be withdrawn.

Also, claim 5 depends from claim 1, and claim 10 depends from claim 6. Applicant respectfully requests that the Examiner's rejection of these claims be withdrawn for the reasons discussed above in connection with claim 1.

Further, claim 11, which has been amended for purposes of clarity rather than in view of the cited art, recites the novel features disclosed in above-discussed claims 1 and 6. Specifically, claim 11 recites both that a low-side switching circuit that is turned off when the voltage

measured at an output voltage detector is lower than a predetermined voltage, and that a high-side switching circuit that is turned off when the voltage measured at an output voltage detector is higher than a predetermined voltage. As discussed above, Nguyen fails to disclose all features of the present invention as recited in claim 11 for the above-discussed reasons in connection with claims 1 and 6.

Therefore, Applicant reasserts that Nguyen fails to disclose all features of Applicant's claim 11, and respectfully requests that the Examiner's rejection of claim 11 be withdrawn.

Claim 15 depends directly or indirectly from claim 11. Applicant respectfully requests that the Examiner's rejection of claim 15 be withdrawn for the reasons discussed above in connection with claim 11.

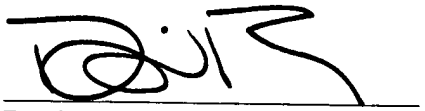
Claims 2-4, 7-9 and 12-14 have been rejected under 35 U.S.C. §103(a) as being obvious in view of the combination of Nguyen and U.S. Patent No. 6,316,999 to Kato (Kato). This rejection is respectfully traversed.

Claims 2-4, 7-9 and 12-14 respectively depend from independent claims 1, 6 and 11. Therefore, these claims are allowable for the same reasons given above for independent claims 1, 6 and 11.

The Examiner should note that Applicant has added new claims 16-26 that further define the invention as recited in independent claims 1, 6 and 11. Support for these new claims can be found throughout the specification and drawings.

In view of the above amendments and remarks, the present application is now believed to be in condition for allowance. A prompt notice to that effect is respectfully requested. Although no fees are believed to be due, permission is given to charge any additional unforeseen fees to Deposit Account 50-1147.

Respectfully submitted,



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